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CATEGORY III CALFED INQUIRY SUBMITTAL

a. Project Title: The Analysis of Geomorphic Requirements Necessary to Enhance the Natural Functioning of the Stanislaus River

Applicant: Philip Williams & Associates Ltd.
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b. Project description and Primary Biological/Ecological objectives:
A river that is exposed to a full range of flows has a tendency to maintain a diversity of habitats in a self sustaining fashion. It is the long term sustainability of these habitats that produce a healthy ecosystem. Existing restoration projects, without the flows necessary to sustain them, may have limited long term benefits. PWA proposes to evaluate the opportunities for restoring some of the natural functioning of the Stanislaus River through increasing flow variability. Restoration of natural channel functions that result from flow variability will enable existing and proposed restoration projects to produce more than immediate short-term benefits, but long-term sustainable benefits. Working within existing constraints of water deliveries and reservoir operations, an evaluation of existing and potential flow regimes will be performed. These regimes shall be evaluated with respect to their effect on the geomorphology of the river and floodplain. PWA shall work with the BOR and stakeholders to evaluate and identify opportunities and constraints to develop flow variability.

The diverse and fragile habitats that exist within, and adjacent to natural rivers, are to a great extent, a function of the flow regime that the stream is exposed to over time. The natural variation in flow depth and velocity drives the physical processes that give rise to the geomorphologic conditions that originally formed the habitats. The production of pools, riffles, runs, point bars and scour holes required for a health fishery are directly related to the imposed flow regime.

In addition to driving channel morphology, flow variation provides the natural fluctuations required for healthy riparian vegetation. Such vegetation provides cover and shelter for fish, increases the food supply by attracting insects, and helps to keep the river cool by providing shade. A natural variation in flow can have a significant effect on the instream riverine aquatic habitat, the shaded riverine aquatic habitat, seasonal wetland and aquatic habitat. Problems with the flow regime was defined as one of the main stressors for Spawning chinook salmon and the out-migration of smolts.

c. Approach/Tasks/Schedule:
Proposed tasks for Phase I

Task 1. Basic Data Collection: Collect basic data on existing and historic conditions related to geomorphology, hydraulics and hydrology of the river.

Task 2. Determine the Relationship between Flow Variability and Morphology: From the basic data collected, relate the historic flow variability to the channel morphology.

Task 3. Develop Basic Flow Variability Requirements: Based on the results of Task 1 and Task 2, and known geomorphic relationships, develop a series of flow scenarios that will

I-007541

provide the flow variability sufficient to restore some of the natural functioning back to the stream.

Task 4. Develop Opportunities and Constraints: With the basic requirements and basic flow variability scenarios, work with the BOR, stakeholders and other agencies to determine the basic constraints and opportunities for operating the river below New Melones Dam.

Task 5 Develop and Evaluate a Flow Regime Scenario: Develop and Evaluate a Flow Regime Scenario within the opportunities and constraints of Task 5.

Task 6 Feasibility of Field Testing: Determine the feasibility of field testing the developed flow regime, and select an existing or new restoration site.

Phase II: Acquire a monitoring site(s) and develop a monitoring plan.

Phase III: Implement the monitoring plan.

Schedule: Phase I — 8 months, Estimate for Phase II --12 months, Estimate for Phase III — long term periodic monitoring required.

d. Justification for Project and Funding by CALFED:

This study with site identification and monitoring will allow system managers and stakeholders to fully understand what is required for long term stability of restoration projects on the Stanislaus. It will also show what degree of restoration may be allowed to occur naturally on the river if some semblance of flow variability were returned to the system. It will allow directly enhance 3 of the priority habitats, Instream Aquatic Habitat, Shaded Riverine Aquatic Habitat, and Seasonal Wetland and Aquatic Habitat. It will also have a direct benefit to the fall run chinook salmon.

e. Budget Costs and Third Party Impacts:

Phase I cost estimate $80,000; no significant third party impacts are anticipated.

f. Applicant Qualifications:

Philip Williams & Associates, Ltd. (PWA), Philip B. Williams, Ph.D., P.E., President. PWA has completed over 100 channel restoration plans for government agencies and private restoration concerns. We have also performed numerous studies of tidal, seasonal, and riparian wetland habitats, conducted long-term monitoring of wetland restoration sites, and performed a variety of fluvial geomorphic studies on streams throughout the central valley and California over the past 20 years.

g. Monitoring and Data Evaluation

PWA will monitor pre- and post-project physical and biological conditions especially in relation to the ecosystem goals set forth in the Ecosystem Restoration Program Plan (ERPP).

h. Local Support/Coordination with programs and Compatibility with CALFED Objectives

The Department of Fish and Game (DFG) has expressed initial interest in this concept. PWA would work with interested stakeholders and agencies and work to find matching funds in Phase II and III. This proposal is consistent with major ecosystem goals of CALFED including the enhancement of 3 priority habitats described in Section d of this proposal. The Phase II and II will be coordinated with ongoing restoration activities. This project would provide insight in understanding the sustainability of existing and proposed restoration projects.

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Consultants in Hydrology

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July 25, 1997

(PWA Ref. # 97-062)

CALFED Bay-Delta Program Office
1416 Ninth Street, Suite 1155
Sacramento, CA 94814

To the CALFED Bay-Delta Program:

Philip Williams & Associates, Ltd. (PWA) is pleased to submit ten copies of our Inquiry Proposal for the CALFED Ecosystem Restoration Projects and Programs entitled:

The Analysis of Geomorphic Requirements Necessary to Enhance the Natural Functioning of the Stanislaus River

Please let us know if you have any questions or if you require any additional information.

Sincerely,

Thomas Burke P.E.
For

Philip Williams, Ph.D., P.E.
Principal

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